CLAIMS

1. An anti-microbial polymeric film comprising a polymeric substrate layer having a first and second surface and on a surface thereof a polymeric coating having a thickness of from about 0.01 to about 14.0 μm and comprising an anti-microbial compound in an amount of from about 0.1 to about 50% by weight of the coating layer, characterised in that (i) said coating provides a heat-seal strength of from 100 g/in to 2500 g/in when heat-sealed to itself and/or (ii) said coating provides a barrier to water vapour and/or oxygen, such that the water vapour transmission rate is in the range of 0.01 to 10g/100 inches^2/day and the oxygen transmission rate is in the range of 0.01 to 10 cm^3/100 inches^2/day/atm.

2. An anti-microbial film according to claim 1 wherein the anti-microbial compound is in particulate form.

3. An anti-microbial film according to claim 1 or 2 wherein the anti-microbial compound is present in an amount of from about 0.1 to about 5%

4. An anti-microbial film according to claim 1, 2 or 3 wherein the anti-microbial compound is an inorganic compound containing a metal or metal ions selected from silver, copper, zinc, tin, mercury, lead, iron, cobalt, nickel, manganese, arsenic, antimony, bismuth, barium, cadmium and chromium.

5. An anti-microbial film according to claim 1, 2 or 3 wherein the anti-microbial compound has the formula $M^1_aH_bA_cM^2_2(PO_4)_3.nH_2O$ wherein:

M^1 is at least one metal ion selected from silver, copper, zinc, tin, mercury, lead, iron, cobalt, nickel, manganese, arsenic, antimony, bismuth, barium, cadmium and chromium;

A is at least one ion selected from an alkali or alkaline earth metal ion;

M^2 is a tetravalent metal ion;

a and b are positive numbers and c is 0 or a positive number such that $(ka + b + mc) = 1$;

k is the valence of metal M^1;

m is the valence of metal A; and

$0 \leq n \leq 6$.

6. An anti-microbial film according to claim 1, 2 or 3 wherein the anti-microbial compound has the formula $Ag_aH_bA_cZr_2(PO_4)_3.nH_2O$ wherein:
A is an alkali or alkaline earth metal ion;
a, b and c are positive numbers such that $(a + b + mc) = 1$;
m is the valence of metal A;
$0 \leq n \leq 6$.

7. An anti-microbial film according to claim 5 or 6 wherein a is in the range 0.1 to 0.5.

8. An anti-microbial film according to claim 5, 6 or 7 wherein b is at least 0.2.

9. A film according to any of claims 5 to 8 wherein the metal A is sodium and m is 1.

10. A film according to any preceding claim wherein the anti-microbial compound contains silver, copper or zinc.

11. A film according to any preceding claim wherein the anti-microbial compound contains silver.

12. An anti-microbial film according to any of claims 1 to 11 wherein said coating provides a water vapour transmission rate in the range of 0.01 to 10g/100 inches^2/day, and/or an oxygen transmission rate in the range of 0.01 to 10 cm^3/100 inches^2/day/atm.

13. An anti-microbial film according to any of claims 1 to 12 wherein said coating provides a heat-seal strength of from 100 to 2500 g/in when heat-sealed to itself.

14. An anti-microbial film according to any preceding claim wherein the haze of the film is less than 15%.

15. An anti-microbial film according to any of claims 2 to 14 wherein the volume distributed mean particle diameter of the anti-microbial particles is in the range of 1.0 to 3.0 μm.

16. An anti-microbial film according to any of claims 2 to 15 wherein the thickness of the coating layer is in the range of 70 to 130% of the volume distributed mean particle diameter of the anti-microbial particles.

17. An anti-microbial film according to any of claims 2 to 15 wherein the thickness of the coating layer is less than the volume distributed mean particle diameter of the anti-microbial particles, preferably such that thickness is in the range of 70 to 99 % of the volume distributed mean particle diameter of the anti-microbial particles.

18. A film according to any preceding claim wherein said polymeric substrate is selected from polyester, polyolefin, polyamide and PVC.

19. A film according to any preceding claim wherein said polymeric substrate comprises polyester.

20. A film according to any preceding claim wherein said polymeric substrate comprises polyethylene terephthalate.

21. A film according to any preceding claim wherein said polymeric substrate has a degree of shrinkage in one or both dimensions of about 10% to about 60% when placed in a water bath at 100°C for 30 seconds.

22. A film according to any preceding claim wherein the gloss is at least 70.

23. A film according to any of claims 1 to 22 wherein the polymer of a coating layer is selected from PVDC, PCTFE, PE, PP, EVOH, PVOH, EVA, polyester and caprolactone.